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Clay Analysis of Upper Assam Basin for Chemical Enhanced Oil Recovery

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Abstract

The success and failure of different chemical enhanced oil recovery (CEOR) techniques can control to a large extent by the presence of different types of clay, its surface area and the reactivity of the clay with the injected chemicals during CEOR techniques. Therefore, reservoir clay analysis is important to study the CEOR process in general and to formulate the CEOR slug in particular. This study pertains to the underground porous media of upper Assam basin. In this paper effective porosity, absolute permeability, minerals and clays present in porous media is studied. Effective porosities were determined to estimate the total pore volume and more importantly the connecting pores and the throat volumes. The absolute permeability are exclusively the properties of the porous media, which determines the ease of flow of fluid through the porous media. Rock petrography study was done by examining the thin sections under optical microscope, Scanning Electron Microscope (SEM) and X-ray Diffractometer (XRD). From these studies the mineral and clay content of the reservoir was characterized, which helps to study the feasibility of a CEOR in upper Assam basin. This petrography study provides two and three dimensional accurate description of minerals of reservoir rock and clay particles. The porous media is a sandstone with high porosity and low absolute permeability. The clays present are smectite, kaolinite and illite with a dominance of smectite and kaolinite, conforming to the swelling and disintegration.

Keywords:
Chemical Enhanced Oil Recovery techniques, Scanning Electron Microscope (SEM) and X-ray Diffractometer (XRD),

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